

BLOODBORNE PATHOGENS

INTRODUCTION

Although the primary mechanism for transmission of bloodborne pathogens is needle stick injuries to healthcare workers, other workers can be exposed via sharps injuries, as well as contact of bodily fluids with mucous membranes or skin. This chapter provides guidance to Fermilab employees to minimize the risk of transmission and to help assure compliance with applicable standards.

APPLICABLE STANDARDS

29 CFR 1910.1030 - OSHA Occupational Exposure to Bloodborne Pathogens

29 CFR 1910.1020 - Access to Employee Exposure and Medical Records

DEFINITIONS

Affected employees - employees who are determined to have a significant risk of occupational exposure to blood or other potentially infectious biological materials.

Bloodborne pathogen - a pathogenic microorganism present in human blood and can be transmitted to and cause disease in others. These pathogens include hepatitis B virus (HBV), hepatitis C virus (HVC), and human immunodeficiency virus (HIV).

Exposure control plan (ECP) - a plan that explains ways to minimize or eliminate exposure to bloodborne pathogens and is compliant with OSHA's bloodborne pathogen standard (29 CFR 1910.1030).

Exposure incident - contact with blood or other potentially infectious material to an eye, mouth, mucous membrane, non-intact skin, or into the body (via injection or injury) in association with a work activity.

Potentially infectious materials - any fluid/tissue that is normally confined to the inside of the body. In particular, blood, any body fluid/tissue visibly contaminated with blood, semen, vaginal secretions/amniotic fluid, and saliva in dental injuries/procedures. The following body fluids do **not** require precautions unless visibly contaminated with blood: nasal secretions, vomit, sputum, feces, tears, sweat, saliva, and urine.

Sharp - any device having corners, edges, or projections capable of cutting or piercing the skin. In a medical setting this often includes hypodermic needles, syringes, scalpel blades, suture needles, and blood vials.

Universal precautions – basic guidelines used to protect workers from possible infection with bloodborne pathogens. When handling potentially infectious material, all persons should be assumed to be infectious and precautions should be taken to prevent spread of infection. Precautions include administrative, engineering, and work practice controls, as well as personal protective equipment (PPE).

SPECIAL RESPONSIBILITIES

Divisions/Sections are responsible for obtaining and maintaining all necessary personal protective equipment (PPE), engineering controls, labels, and red bags required by this plan.

The Lab's Custodial Services contractor has primary responsibility for cleaning up spills of potentially-infectious materials when the person who is the source of the material is unable to do so. Due to limited availability and/or access restrictions on custodial employees, other personnel may be called upon to clean up spills.

The Medical Department is responsible for maintaining the ECP including an annual review, providing training on the HBV vaccination, maintaining the bloodborne pathogen lesson plan, conducting post-exposure evaluation and follow up, and ensuring that all required medical actions are performed as well as the maintenance of appropriate employee health records.

The Fire Department and the Medical Department share responsibility for providing bloodborne pathogen training to Fermilab employees. These organizations are also responsible for cleaning up potentially-infectious materials that may contaminate their clothing, equipment, or facilities.

PROGRAM DESCRIPTION

Fermilab's ECP consists of the following elements as required by the OSHA standard 29 CFR 1910.1030. A list of all job classifications in which employees have a significant potential for occupational exposure and the tasks in which these exposures are likely to occur. A description of how exposures are controlled through the use of universal precautions, and engineering and work practice controls, as well as personal protective equipment. HBV vaccinations are made available to all employees who have occupational exposure. Post-exposure evaluation and follow up are provided to all employees who have had an exposure incident. Communication of hazards is

accomplished via labels and signs as well as information and training. Records for each occupationally exposed employee are maintained in accordance with 29CFR 1910.1020 with regard to medical surveillance, training, availability, and suspected exposures. Following the report of an exposure incident, an exposed employee is immediately offered a confidential medical evaluation. Follow up will include documentation of the route(s) of exposure, and the circumstances under which the incident occurred.

The ECP is updated annually by Medical Department staff when their annual refresher training is performed. This review includes consideration of new medical devices designed to prevent or minimize exposure to potentially infective material. Input is solicited from at risk, non-managerial personnel including those responsible for direct care of injured or ill personnel.

BASIC BLOOD SPILL PROCEDURES

These are the basic procedures for dealing with a spill of blood or other potentially infectious material. If an injury is serious or there is a large amount of bleeding call for an emergency response by dialing X3131. In all situations, medical evaluation of potentially-exposed personnel within two hours is crucial.

1. **STOP AND CONTAIN THE BLEEDING.** If the employee is able he may apply direct pressure to the wound (see www.mayoclinic.com/health/first-aid-cut). If the employee is unable to apply pressure and there is access to nitrile or vinyl gloves which are impermeable to blood, another employee may apply pressure to the wound. Bleeding should be contained by application of clean dry gauze, paper tissues, etc. to contain the flow of blood.
2. **RESTRICT ACCESS** to the contaminated area to minimize exposure to others.
3. **CLEAN UP THE BLOOD.** The person who is the source of spilled material should clean up their own blood/body fluid if the cut is small and they are able. A solution of bleach mixed 10 parts water to 1 part bleach should be used to disinfect any blood/body fluid. If the person who is the source of spilled material is unable to clean up their own blood/body fluid, Custodial Services personnel (X2798) are qualified and equipped to safely clean up spills. Fire Department (X3428) and Fermilab Medical Office (X 3232) personnel are able to provide instruction on clean up and provide necessary supplies.
4. **REPORT TO THE MEDICAL DEPARTMENT.** Injured employees should report to the Medical Office as soon as possible. Anyone exposed to blood or other potentially infectious material should also report to the Fermilab Medical Office as

soon as possible. If incident occurs when the Medical Office is closed the exposed employee should report to the nearest emergency facility with a copy of the post-exposure evaluation report (Appendix B-1, Appendix B-2, Appendix B-4, Appendix C-1 and the Bloodborne Pathogen Policy) for the physician on duty to complete. The employee is to report to the Medical Department the next working day with both the original and copy of each report (Appendix B-1, Appendix B-2, Appendix B-4 and Appendix C-1.) Do not delay prompt medical evaluation to complete reports. Employee's supervisor should be notified of injury to an employee

5. FOLLOW UP. Identification of the source of contamination is important for risk assessment and should be identified and reported to the Medical Department as soon as possible. Item 1-26 of Appendix C- 1 is to be completed by the supervisor or the individual completing the initial report.

LABWIDE PROCEDURES

Labeling - The following labeling methods are used at Fermilab.

<u>Item</u>	<u>Label Type</u> (size, color, etc.)
Laboratory specimens	Ziploc bag with biohazard label
Contaminated Laundry	Red bag with biohazard label
Contaminated PPE	Red bag with biohazard label
Biohazard/Needle Containers plastic container	Biohazard label w/"SHARPS", red hard box
Small spill clean-up bag	Red bag with biohazard label

Employees who are qualified bloodborne pathogen workers or are otherwise assigned to handle biological waste containers will ensure that warning labels are affixed or red bags are used as required. Employees are to notify their supervisor and/or Senior Safety Office (SSO) if they discover regulated waste containers, refrigerators containing blood or other potentially infectious material, contaminated equipment, etc. without proper labels.

Employee Training - Basic training regarding bloodborne pathogens occurs at the time of hire in new employee orientation. Employees are instructed not to clean up another person's blood or body fluid. Employees with a significant risk of exposure to potentially infectious materials receive an explanation of the ECP during their initial training session. Refresher training is performed annually. All employees have an opportunity to review the plan at any time by logging onto the ESH web page (www-esh.fnal.gov/FESHM/5000/5072.html) or contacting the Fermilab Medical Department at X3232.

All employees who have a potential for occupational exposure to bloodborne pathogens must receive initial training conducted by a qualified instructor in the Fire Department or Medical Department. This instructor must be approved by the Site Occupational Medical Director. Refresher training is offered on an annual basis. Training includes the following topics:

- Epidemiology.
- Symptoms and transmission of bloodborne pathogen diseases.
- A copy and explanation of the bloodborne pathogen standard.
- How to recognize tasks and other activities that may involve exposure to blood and body fluids.
- Explain the use and limitations of engineering controls, work practice controls and PPE.
- Explain types, uses, location, removal, handling, decontamination and disposal of PPE.
- Explain basis for PPE selection.
- Information on the HBV vaccine including information on its effectiveness, safety, route of administration, benefits of vaccination, and that immunization is offered free of charge.
- Information on the appropriate actions to take and persons to contact in an emergency.
- An explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available.
- Information on the post-exposure evaluation and follow-up that will be made available
- An explanation of signage and labels and/or color coding required by the standard and used at this facility
- An interactive question and answer period with the person conducting training
- Classes may be scheduled at the following URL:
- www.esh.fnal.gov/pls/default/esh_home_page.page?this_page=100

Work Practice Controls - Refers to practical techniques that decrease the likelihood of exposure by changing the way a task is performed. Examples include hand washing, handling of used needles, collection and transport of fluids and tissues.

- Contaminated sharps are to be discarded as soon as possible without recapping. Use containers that are closable, puncture resistant, leak-proof on the sides and bottoms, and labeled or appropriately color-coded red. Sharps

containers may be obtained by calling the Hazard Control Technology Team at X3741.

- Bins, pails, emesis basins, wash basins are cleaned and decontaminated as soon as feasible.
- Broken glass (contaminated or otherwise) is picked up by using a brush and dust pan. Do not use hands.
- All other regulated waste is placed in containers that are closable, constructed to contain all contents and prevent leakage, appropriately labeled or color-coded, and closed prior to removal to prevent spillage or protrusion of contents during handling.
- Laundry handling requirements - Clothing contaminated with blood or other potentially infectious material will be processed on a case-by-case basis in accordance with the below requirements or disposed of appropriately. Handle contaminated laundry as little as possible. Place wet contaminated laundry in leak-proof, labeled, or color-coded containers before transport. Use red bags or bags with biohazard label affixed to the bag. Wear gloves, gowns, eye protection, face protection and/or other PPE as indicated. Maintain the bag of contaminated laundry at a secure location. Arrange to have the contaminated laundry picked up by a qualified laundry service for cleaning or disposed of in accordance with Chapter [8021](#) of this Manual.
- Waste disposal - Refer to Fermilab Hazardous Waste Disposal Chapter ([8021](#)) for the procedures to dispose of sharps containers or other regulated waste (www.esh.fnal.gov/FESHM/8000/8021.htm).

Procedures for Use of PPE/Barriers

- Wash hands as soon as possible after removal of gloves or other PPE.
- Remove PPE after it becomes contaminated, and before leaving the work area. Any garment contaminated by blood or other potentially infectious material should be removed as soon as feasible and in such a way as to avoid skin contact with the contaminated surface of garment.
- Used PPE may be disposed of in appropriate containers, such as red, hard-sided containers with biohazard symbol or red biohazard bags.
- Contaminated laundering containers: Red bag, or garbage bag with red biohazard symbol.
- Areas to be decontaminated are marked with yellow warning tape.

- Wear appropriate waterproof gloves (vinyl or nitrile) when it can be reasonably anticipated that there may be hand/skin contact with blood or other potentially infectious materials.
- Gloves may be disinfected for reuse if their integrity will not be compromised. Gloves should be discarded if they show signs of cracking, peeling, tearing, puncturing or deterioration. Never wash or decontaminate disposable gloves for reuse.
- Wear appropriate face and eye protection when splashes, sprays, splatters, or droplets of blood or other potentially infectious materials pose a hazard to the eye, nose, or mouth.

Engineering Controls - Refers to methods used to remove hazards from the workplace. Examples **include** sharps disposal containers, retractable needles, needleless systems, and spill clean-up kits.

Post-Exposure Evaluation and Follow-Up - Medical evaluation within two hours of exposure to potentially infectious materials is crucial.

- A confidential medical evaluation and follow-up will be immediately available. This evaluation will be conducted by a licensed medical professional in the Medical Department or offsite medical facility if the Medical Department is not open. Routes of exposure and how exposure occurred will be documented.
- The identity of the source individual will be documented (unless employer can establish the identification is infeasible or prohibited by state or local law). Consent for testing of source individual will be sought. Source individual will be tested for HIV, HCV, and/or HBV. If source individual is known to be positive for any of the above, new testing need not be performed.
- Assure that the exposed employee is provided with the source individual's test results and with information about applicable disclosure laws regarding identity and infectious status of source individual. Document source testing and that source testing and disclosure information was provided to exposed employee and employee's health care provider.
- Obtain exposed employee's consent to collect blood as soon as feasible after the exposure incident. Test exposed employee's blood for HBV, HIV, HCV and LFT at time of incident. Testing should be repeated at 3 months, and six months. If the employee does not give consent for HIV serologic testing during collection of blood for baseline testing, preserve the baseline blood sample for at least 90 days: if the exposed employee elects to have the baseline sample tested during this waiting period, perform the testing as soon as feasible.

- **Hepatitis B Vaccinations** - The HBV vaccination series is available to employees with potential exposure to infectious materials, at no cost, after training, and within 10 days of initial assignment. In addition to the HBV vaccinations, the Medical Department will provide training on HBV vaccinations, including vaccine effectiveness, safety, benefits, route of administration, and availability. Vaccination is encouraged unless documentation exists that the employee has previously received the series, antibody testing reveals that the employee is immune, or medical evaluation shows that vaccination is contraindicated. Employees who decline vaccination at the time it is offered must sign a Vaccine Declination form (see Appendix A-1).

However, they may chose to have the vaccine at a later date at no cost. Documentation regarding vaccine status is kept in the Medical Department.

Recordkeeping - Training records are generated for each employee upon completion of training. Original attendance sheets are kept by the trainer. Copies are sent to the ESH section. In addition, training is documented electronically in the ESH TRAIN database that can be found at the following URL:

www.esh.fnal.gov/pls/default/esh_home_page.html. Training records include the date(s) of training session(s), the names and qualifications of persons conducting the training, and the names and job titles of all persons attending the training session. Employee training records are provided upon request to the employee or the employee's authorized representative within 15 working days. Such requests should be addressed to the division/section ES&H organization. Program content is available from the Medical Department.

Medical records for active employees are maintained in the Medical Office. Medical records for terminated employees are kept in an off-site storage facility for thirty years after termination of employment. Employee Medical Record requests can usually be provided within 15 working days to the employee or designated representative having written consent. Requests should be sent to:

Fermilab Medical Office
P.O. Box 500, MS 204
Batavia, IL, 60510

Medical Records are maintained for each employee with occupational exposure in accordance with applicable standards. This includes completed copies of the appendices to this chapter. In particular, Appendix C -2 is considered to be the "SHARPS LOG".

ORGANIZATION-SPECIFIC INFORMATION & PROCEDURES

Important phone numbers

Organization	Phone number
Medical Department	3232
Custodial Services	2798
Fire Department / Emergency	3131
Fire Department / Non- Emergency	3428

Job Classifications affected employees for Bloodborne Pathogen Exposure

Job Title	Department/Location
Physician	ESH/Medical Office
Nurse I	ESH/Medical Office
Nurse II	ESH/Medical Office
Fire Chief	BS/Fire Department
Lieutenant	BS/Fire Department
Captain	BS/Fire Department
Fire Fighter	BS/Fire Department
Security Captain	BS/Security Department
Housekeeping Manager	BS/ Accommodations
Day Care Teacher	WR/Day Care Center
Day Care Attendant	WR/Day Care Center
Day Care Administrator	WR Day Care Center
Lifeguards	WR/ Recreation

In addition to these employees, it is recognized that all janitorial and housekeeping staff have a potential for occupation exposure to bloodborne pathogens. This work is currently carried out by contract service vendors who are responsible for implementation of necessary bloodborne pathogen precautions. Divisions/Sections may include additional individuals in the plan based on unusual job assignments. Certain Facilities Engineering & Operations employees may be eligible for HAV and HBV vaccination depending on their work assignments. These employees are covered by the Exposure Control Plan.

Location of PPE/Barriers

Organization	Location
Medical Office	Storage closet in Exam Room 2
Day Care	Storage closet at north end of facility
Fire Department	On emergency vehicles; both squad and engines, and in the first aid lockers
Lifeguards	Storage Closet

Work practice controls

Organization	Controls
Medical Department	<ul style="list-style-type: none">• Gloves should be used for venipuncture, wound care, clean-up of bodily fluids.• Use a scoop to pick up broken glass.• Needles should not be recapped.• Use caution when transferring serum to second collection tube.• Use sharps disposal containers for needles or other sharps.• Promptly dispose of sharps.• Sharps disposal containers should be routinely inspected by the nursing staff to prevent overfilling.
Day Care Center	<ul style="list-style-type: none">• Use gloves for wound care and clean-up activities.• Use sharps disposal containers for needles and other sharps.• Promptly dispose of sharps.• Sharps disposal containers should be routinely inspected by the Day Care Manager or teachers to prevent overfilling.
Lifeguards	<ul style="list-style-type: none">• Gloves should be used for wound care and clean-up activities.• Use a scoop to pick up broken glass.
Fire Department	<ul style="list-style-type: none">• Gloves should be used for wound care, venipuncture, starting IV's, clean-up of bodily fluids.• Use of sharps disposal containers for needles and other sharps.• Promptly dispose of sharps.• Sharps disposal containers should be routinely inspected by emergency personnel and to prevent overfilling.

Health Care Professional Training - The Site Occupational Medical Director ensures that health care professional(s) responsible for employee's HBV vaccination and post-exposure evaluation and follow-up are given a copy of OSHA's Blood-borne Pathogens Standard (29 CFR 1910.1030).

Subcontractors - All subcontractors on the Fermilab site that have significant exposure to blood-borne pathogens must comply with appropriate OSHA standards, including 29 CFR 1910.1030 and 29CFR 1910.20.